

been compelled to hear and to bear very strong expressions from his continental friends on this point. The writer has a book on *Lepidoptera* before him, and as nine-tenths of "British" entomologists confine their attention to *Lepidoptera*, the term "British entomologist" is here used in its narrow sense.

The time *will* arrive when we can safely say "*Nous avons changé tout cela.*" According to what we have observed during an experience of nearly thirty years, it is in rapid progress towards arrival, and that progress has been vastly accelerated recently. Many of our entomologists are expanding their ideas by continental travel, and latterly we have had from their pens several important indications that it is possible for British entomologists to know something about the productions of continental Europe, and even to endeavour to teach and lead their fellow-countrymen in the same direction. The thin end of the wedge naturally consists in popularising the subject.

The thin end of the wedge has been inserted, and it is being driven deeper to an extent that must create alarm amongst "British" collectors. There was a time when they had a nomenclature almost their own, and resented any attempt to upset it. Even this pet has been rudely insulted in the eyes of the most conservative in their number.

We have said that nine-tenths of our entomologists are probably Lepidopterists. The most attractive *Lepidoptera* are butterflies, and it is in this direction that the thin end of the wedge is being specially inserted. Almost within a year three works by British writers concerning European (as including British and continental) *Lepidoptera* have made their appearance. There are Lang's "Butterflies of Europe," and a re-issue of Kirby's "European Butterflies and Moths." Now we have before us Kane's "Handbook of European Butterflies." We welcome all as constituting the thin end of the wedge.

Mr. Kane's book differs in its plan from the works mentioned in connection with it. The only parallel to be drawn is with Kirby's "Manual," published nearly twenty-five years ago. Mr. Kane has produced a portable book that can, and should, go into the pocket of every entomological tourist. With no disparagement of the praiseworthy attempts of other writers to insert the thin end of the wedge, we incline to think this work will give it a sharper edge. So far as any work of the kind can be called a "handbook," this seems to be to the point. It is limited to the butterflies of Europe (geographically). The arrangement is that of Staudinger. The plan is to give concise descriptions of each species (in which abbreviations are freely, but intelligibly, used), notes on habits if known, and a copious list of localities; the latter is especially full for Switzerland, the south of France, and the Pyrenees, but wants enlarging for some other countries. When following Staudinger, the author should not have committed the error of wrongly designating *Papilio podalirius*; he overlooked the fact that Staudinger thought proper to correct himself in this case. It is not for us to compare the abbreviated descriptions with the insects; they bear the impress of being good. The introductory remarks are well considered: the endeavours to differentiate a butterfly from a moth might well have been modified; the distinctions have become so subtle as

to rest more on intuition than anything else. Our author judiciously advocates the practice of placing the captured specimens in *papillottes* in the first instance, and fully explains the process. He does not appear to have remembered a suggestion by Dr. Jordan, to the effect that when the collector is *en voyage* a dozen specimens of the smaller butterflies may be placed in a pill-box, and both time and space be thereby economised (this would not answer in the case of exotic collectors). Our author evidently writes from personal experience, and is enthusiastic in his description of some of his excursions. His enthusiasm even carries him too far, for when he says: "Such days as these rise upon the memory like a reminiscence of Paradise, fraught with glories of colour, odour, light, and life," we are tempted to marvel [why he again became mortal! The plates form almost a new departure in the method of illustrating works of this kind. There are 15, on which are about 130 figures. They are adapted from a peculiar photographic process. We have seen other attempts in this direction. Nothing can exceed the beauty and faithfulness of some of the figures in Mr. Kane's book; and here arises the difficulty: they are unequal, and so we fear will remain all attempts to apply photography where particular colours or shades are involved.

The author is responsible for the remarks on "preparation" that here precede the notice of the book itself. He avows himself personally in favour of setting his specimens flat (justly complaining of the imperfections of some of the pins used on the Continent), but advocates only half measures—a comparatively short pin on which the insect is to be set "half-way." This is a decided advance, and the practice is now often followed for British insects by the less conservative; but English pins (of the required length and not open to the objections stated) can be had, and on them the insects should be set in the continental fashion. Or continental pins would do equally well if used of a stronger size than is often done. The stronger the pin (up to a certain point) the more durable the specimen. The subject of pinning and preparation was thought not unworthy of forming the substance of the address of a recent President of the Entomological Society. Whether it was appreciated or not we cannot say, but if (as we believe was so) the writer of that address sought to destroy one of the greatest barriers that exists between British Lepidopterists (always excluding the thoroughly conservative irreconcilables) and scientific fraternity with the rest of the world, the subject was worthy of the occasion. R. MCLACHLAN

ANALYTICAL GEOMETRY

A Treatise on the Analytical Geometry of the Point, Line, Circle, and Conic Sections, containing an Account of its most recent Extensions; with numerous Examples. By J. Casey, F.R.S. (Dublin: Hodges, 1885.)

DR. CASEY, by the publication of this third treatise, has quite fulfilled the expectations we had formed when we stated, some months since, that he was engaged upon its compilation. It is a worthy companion of those which have preceded it. It possesses many points of novelty, *i.e.* for the English mathematician. He has, from the first introduction of certain recent Continental discoveries in

geometry, taken a warm interest in them, and in the purely geometrical treatment of them has himself given several beautiful proofs, and has added discoveries of his own, as we have already pointed out in our notice of the last edition of his "Sequel." We may here note that this last work has met with a very warm welcome in France and Belgium. The author himself has added so much in years now long past to several branches of the subject treated of in the volume under notice—the equation of the circle (and of the conic) touching three circles (three conics), and other properties—that he is specially fitted, by his intimate acquaintance with it and by his long tuitional experience, to write a book on analytical geometry.

The divisions are into eight chapters, the first of which, in four sections, treats of the Point, three sections being taken up with Cartesian and polar co-ordinates and the transformation of co-ordinates; the fourth section gives a brief account of Complex Variables, introduced by Cauchy in 1825, and extended by Gauss: "the introduction of these variables is one of the greatest strides ever made in mathematics." The second chapter, on the Right Line, treats it (§ 1) by Cartesian, then (§ 2) by trilinear, and (§ 3) by point and line co-ordinates; this last comparison is taken from Clebsch's "Vorlesungen der Geometrie." In Chapter III. four sections are devoted to the circle, § 2 being devoted to a system of tangential circles, § 3 to the "trilinear" forms of equations to the old circles and to all the recent circles; § 4 is devoted to tangential equations. Chapters IV., V., VI., VII. treat of, respectively, the general equation of the second degree, the parabola, ellipse, and hyperbola. Chapter VIII. (miscellaneous investigations) discusses many matters of novelty and interest: § 1 is on contact of conic sections; § 2, similar figures, gives a good *résumé* of results connected with Brocard's points and circles, Neuberg's circles, M'Cay's circles, and Kiepert's hyperbola (if upon the three sides of a triangle ABC similar isosceles triangles be described, the triangle formed by their vertices is in perspective with ABC, and the *locus* of their centre of perspective is an equilateral hyperbola); in § 3, on the general equation in trilinear co-ordinates, Aronhold's notation is "now published for the first time in an English treatise on conic sections"; the remaining six sections are occupied respectively with Envelopes, Projection, Sections of a Cone, Homographic Division, Reciprocal Polars, and Invariants and Co-variants. An idea has now, we trust, been conveyed to the reader of the ground covered by Dr. Casey: a good deal of it is, of course, well-worn ground, but even this has been adorned by his touch, and much relating to the new circles has never before been introduced into our books. These circles must soon become as familiar to our junior students as the nine-point circle, whose properties are by this time nearly exhausted.

The examples are exceedingly numerous, and a good feature is that most of the results obtained in them are numbered consecutively with the important results of the text: this enables the author to refer to them with facility. They exceed 600 in number.

There are several minor typographical inaccuracies which are easily corrected, but there are besides incorrect references to back articles and pages, which cause the

reader some little annoyance in using the book: these can be easily rectified in a second edition (one on p. 150 gave us trouble, for Art. 23 read 21, p. 33).

It remains only to say that the expenses of the publication have been defrayed by the liberality of the Committee of the "Dublin University Press Series."

TWO YEARS IN THE JUNGLE

Two Years in the Jungle: the Experiences of a Hunter and Naturalist in India, Ceylon, the Malay Peninsula, and Borneo. By William T. Hornaday, Chief Taxidermist, U.S. National Museum, late Collector for Ward's Natural Science Establishment. (London: Kegan Paul, Trench, and Co., 1885.)

THE author of this somewhat ponderous volume was sent to India by "Professor" Ward, the well-known purveyor of natural history specimens at Rochester, New York, for the purpose of collecting various zoological desiderata, and especially skins and skeletons of the larger mammalia, and of crocodiles. The importance of this kind of collecting is greater than would be supposed by those who have no experience of its difficulty, and the task of securing specimens, and of preserving them so as to render them useful for scientific study, demands no inconsiderable amount of courage, perseverance, and knowledge. The majority of the skins and skeletons of the larger mammalia in European museums are derived from the specimens, generally dwarfed in stature, and very often diseased, obtained from menageries, and if these are to be replaced by the spoils of wild individuals, hunters who have a considerable knowledge of taxidermy must be engaged to collect. Many of the largest and most remarkable mammalia of the world are being rapidly exterminated, and before they share the fate of the dodo and *Rhytina* it is to be hoped that good skeletons, at all events, may be rescued for the study of future generations.

Mr. Hornaday is evidently an enthusiast in his art, and having greatly enjoyed both the sport of shooting wild animals and the process of converting elephants, tigers, orang-utans, crocodiles, and other formidable denizens of forest and swamp into useful museum specimens, he proceeds in the present work to give a full account of his wanderings and adventures during two years and nine months, the greater portion of which was spent in very wild parts of South-Eastern Asia and some of the neighbouring islands.

On the whole, and despite many shortcomings, both literary and scientific, the book is an agreeable account of an interesting journey, and scattered through the volume are many useful zoological notes. Amongst the most important of these are those referring to orang-utans, of which Mr. Hornaday obtained forty-three specimens, the majority shot by himself. He gives a series of measurements, which are particularly useful, of these and of several of the other mammalia which he obtained. He also describes the "nests," or rather resting-places, made by orangs, though the figure which he gives of one is unfortunately taken from an artificial imitation set up by him in the Museum at Washington and not from nature. The figure in question looks more like a gigantic crow's nest than the rough platform described at p. 403, and